

Claims

- [c1] A system for facilitating three-dimensional movement of an object comprising:
- a non-empty set of line support elements coupled with an object having at least one element for applying a directional force;
 - an X line and a Y line coupled with a plurality of sides of said object and wherein said X line and said Y line are configured to move via said non-empty set of line support elements;
 - an X junction configured to relocate said X line to effectuate X movement of said object;
 - a Y junction configured to relocate said Y line to effectuate Y movement of said object; and,
 - a Z movement device configured to displace said X line and said Y line to effectuate Z movement of said object.
- [c2] The system of claim 1 wherein said X line and said Y line are two line sides of a line.
- [c3] The system of claim 1 wherein said element for applying a directional force comprises a buoyant object.
- [c4] The system of claim 1 wherein said element for applying

a directional force comprises a mass subject to the force of gravity.

- [c5] The system of claim 1 wherein said element for applying a directional force comprises a magnetic material.
- [c6] The system of claim 1 wherein said element for applying a directional force comprises a thruster.
- [c7] The system of claim 1 further comprising a redirection sheave.
- [c8] The system of claim 1 wherein said set of line support elements allow said X line and said Y line to pass through said set of line support elements.
- [c9] The system of claim 1 wherein said set of line support elements comprise components which control movement of said X line and said Y line.
- [c10] The system of claim 1 further comprising:
said X junction comprising an X movement motor having an X movement device coupled with said X line;
said Y junction comprising a Y movement motor having a Y movement device coupled with said Y line; and,
a Z movement motor coupled with said Z movement device.
- [c11] The system of claim 10 further comprising an electrical

generator and electronic drive units coupled with said X movement motor and said Y movement motor and said Z movement motor.

[c12] The system of claim 1 further comprising a nested reeving.

[c13] The system of claim 12 wherein said nested reeving comprises a recursively nested reeving.

[c14] The system of claim 12 wherein said nested reeving comprises a non-recursively nested reeving.

[c15] The system of claim 12 wherein said nested reeving comprises an independent reeving wherein said object is not coupled to a second object.

[c16] The system of claim 12 wherein said nested reeving comprises a dependent reeving wherein said object is coupled to a second object via a coupling.

[c17] The system of claim 16 wherein said coupling comprises a rod.

[c18] The system of claim 17 wherein said rod comprises a telescoping element.

[c19] The system of claim 17 wherein said rod is coupled with an articulated arm or boom.

- [c20] The system of claim 1 further comprising an isolator associated with said object.
- [c21] The system of claim 20 wherein said isolator comprises passive stabilization.
- [c22] The system of claim 20 wherein said isolator comprises active stabilization.
- [c23] The system of claim 20 wherein said isolator comprises active stabilization in at least one first axis and passive stabilization in at least one second axis.
- [c24] The system of claim 20 where said isolator is configured to support a vertical camera assembly supported at approximately the center of gravity of said vertical camera assembly.
- [c25] The system of claim 20 wherein said isolator is configured to support a camera assembly away from the center of gravity of said camera assembly.
- [c26] The system of claim 1 wherein said object is coupled with an articulated arm or boom.
- [c27] The system of claim 1 wherein said object is coupled with a hoist or loader.
- [c28] The system of claim 1 wherein said object is coupled

with a mining scoop.

- [c29] The system of claim 1 wherein said object further comprises a downward pointing camera for remotely viewing from the position of said object.
- [c30] The system of claim 1 wherein said object comprises at least one person.
- [c31] The system of claim 30 wherein said at least one person may control the motion of said object.
- [c32] The system of claim 1 further comprising at least three supports wherein said at least three supports are positioned at an elevation differing from an elevation of said object with respect to a coverage area.
- [c33] The system of claim 1 further comprising a collision sensor wherein said object is positioned to avoid a collision with a collision object with respect to said object and said X line and said Y line.
- [c34] A method for facilitating three-dimensional movement of an object comprising:
 - relocating an X line associated with an object wherein said X line is reeved through a plurality of supports to effectuate X-movement of said object;
 - relocating a Y line associated with said object wherein

said Y line is reeved through said plurality of supports to effectuate Y-movement of said object; and, displacing said X line and Y line to effectuate Z-movement of said object.

- [c35] The method of claim 34 wherein said X line and Y line are two line sides of a line.
- [c36] The method of claim 34 further comprising coupling said object to an element for applying a directional force to said object.
- [c37] The method of claim 34 further comprising operating a nested reeving.
- [c38] The method of claim 34 further comprising:
isolating an object coupled with said platform from line movement.
- [c39] The method of claim 34 further comprising:
stabilizing an object passively coupled with said platform from line movement.
- [c40] The method of claim 34 further comprising:
stabilizing an object actively coupled with said platform from line movement.
- [c41] The method of claim 34 further comprising:
obtaining pictures from a photographic device coupled

with said platform.

- [c42] The method of claim 34 further comprising:
avoiding a collision between a collision object and said platform, said X line and said Y line.
- [c43] A system for facilitating three-dimensional movement of an object comprising:
means for relocating an X line associated with an object wherein said X line is reeved through a plurality of supports to effectuate X-movement of said object;
means for relocating a Y line associated with said object wherein said Y line is reeved through said plurality of supports to effectuate Y-movement of said object; and,
means for displacing said X line and Y line to effectuate Z-movement of said object.
- [c44] The system of claim 43 wherein said X line and Y line are two line sides of a line.
- [c45] The system of claim 43 further comprising means for coupling said object to an element for applying a directional force to said object.
- [c46] The system of claim 43 further comprising means for operating a nested reeving.
- [c47] The system of claim 43 further comprising:

means for isolating an object coupled with said platform from line movement.

- [c48] The system of claim 43 further comprising:
means for stabilizing an object passively coupled with said platform from line movement.
- [c49] The system of claim 43 further comprising:
means for stabilizing an object actively coupled with said platform from line movement.
- [c50] The system of claim 43 further comprising:
means for obtaining pictures from a photographic device coupled with said platform.
- [c51] The method of claim 43 further comprising:
means for avoiding a collision between a collision object and said platform, said X line and said Y line.
- [c52] A method for facilitating three-dimensional movement of an object comprising:
generating a travel path of a virtual object through three-dimensional space with a computer simulation by:
recording an X control input used in relocating a virtual X line associated with a virtual object wherein said virtual X line is reeved through a plurality of virtual supports to effectuate virtual X-movement of said virtual object;
recording an Y control input used in relocating a virtual Y

line associated with said virtual object wherein said virtual Y line is reeved through said plurality of virtual supports to effectuate virtual Y-movement of said virtual object;

recording a Z control input used in displacing said virtual X line and said virtual Y line to effectuate virtual Z-movement of said virtual object; and,

displaying said travel path on said computer in a virtual environment.

[c53] The method of claim 52 further comprising:
applying said recorded X, Y and Z control inputs to an X junction, Y junction and Z movement device respectively to effectuate actual movement of a real object.

[c54] The method of claim 52 further comprising:
applying a second set of recorded control inputs to a nested reeving.

[c55] The method of claim 52 further comprising:
editing said travel path on said computer in order to recalculate said X control input said Y control input and said Z control input.

[c56] The method of claim 52 further comprising:
deviating from said travel path in order to avoid a collision.

- [c57] A system for facilitating three-dimensional movement of an object comprising:
a first line and a second line coupled with a rod at an offset between said first line and said second line
wherein said rod is further coupled with an object and
wherein said first line and said second line are configured to move said object;
a first junction configured to move said first line;
a second junction configured to move said second line.
- [c58] The system of claim 57 wherein said first line and said second line are configured to rotate said rod with respect to a vertical axis.
- [c59] The system of claim 57 wherein said object comprises a microphone.
- [c60] The system of claim 57 wherein said object comprises a photographic device.
- [c61] The system of claim 57 wherein said first line and said second line are two line sides of a line.
- [c62] The system of claim 57 wherein said rod comprises a telescoping element.
- [c63] The system of claim 57 wherein said rod is coupled with an articulated arm or boom.

- [c64] The system of claim 57 wherein said boom comprises a telescoping element.
- [c65] The system of claim 57 further comprising a collision sensor wherein said object is positioned to avoid a collision with a collision object with respect to said object, said rod, said first line and said second line.
- [c66] A method for facilitating three-dimensional movement of an object comprising:
moving a first line associated with an object wherein said first line is coupled to a rod associated with said object;
moving a second line associated with said object wherein said second line is coupled to said rod at an offset from said first line; and,
rotating said rod with respect to a vertical axis by adjusting said first line.
- [c67] The method of claim 66 further comprising isolating said object from said rod.
- [c68] The method of claim 66 further comprising:
avoiding a collision between a collision object and said object, said rod, said first line and said second line.
- [c69] The method of claim 66 wherein said first line and second line are two line sides of a line.

- [c70] The method of claim 66 further comprising:
obtaining pictures from a photographic device coupled with said platform.
- [c71] The method of claim 66 further comprising:
obtaining sound from a microphone coupled with said platform.
- [c72] A system for facilitating three-dimensional movement of an object comprising:
means for moving a first line associated with an object wherein said first line is coupled to a rod associated with said object;
means for moving a second line associated with said object wherein said second line is coupled to said rod at an offset from said first line; and,
means for rotating said rod with respect to a vertical axis by adjusting said first line.
- [c73] The system of claim 72 further comprising means for isolating said object from said rod.
- [c74] The system of claim 72 further comprising:
means for avoiding a collision between a collision object and said object, said rod, said first line and said second line.

- [c75] The system of claim 72 wherein said first line and second line are two line sides of a line.
- [c76] The system of claim 72 further comprising:
means for obtaining pictures from a photographic device coupled with said platform.
- [c77] The system of claim 72 further comprising:
means for obtaining sound from a microphone coupled with said platform.